

Six new species in the genus *Phyllomyza* Fallén (Diptera: Milichiidae) from China with a key to Chinese species

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Abstract: Six species in the genus *Phyllomyza* Fallén from China are reported. The following six species are described as new to science: *P. brevipalpis* sp. nov., *P. gangliiformisa* sp. nov., *P. lii* sp. nov., *P. longisetae* sp. nov., *P. melanogastera* sp. nov., and *P. nigrimarginata* sp. nov. A key to the known species of *Phyllomyza* from China is presented.

Key words: Opomyzoidea; Phyllomyzinae; taxonomy

中国真叶蝇属六新种及中国种类检索表（双翅目：叶蝇科）

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摘要: 记述中国真叶蝇属 6 新种：短须真叶蝇 *P. brevipalpis* sp. nov.，瘤突真叶蝇 *P. gangliiformisa* sp. nov.，李氏真叶蝇 *P. lii* sp. nov.，长毛真叶蝇 *P. longisetae* sp. nov.，黑腹真叶蝇 *P. melanogastera* sp. nov. 和黑缘真叶蝇 *P. nigrimarginata* sp. nov.，编制了本属中国种类的检索表。

关键词: 禾蝇总科；真叶蝇亚科；分类

Introduction

Phyllomyza Fallén, 1810 (Diptera: Milichiidae) is a small genus in the subfamily Phyllomyzinae. This subfamily is assigned to the family Milichiidae. *Phyllomyza* is distributed globally except in the Neotropical region (Brake 2000; Hennig 1937, 1967; Iwasa 2003; Malloch 1914a; Papp 1976, 1984; Papp & Wheeler 1998; Xi & Yang 2013, 2015a, b; Yang 1998). The Chinese species were reviewed with thirty-one known species, of which four species were distributed in Taiwan (Hendel 1914; Malloch 1914b; Yang 1998; Xi & Yang 2013, 2015 a, b; Xi, Yin & Yang 2016; Xi, Yang & Yin 2018 a, b; Xi & Yin 2018).

In this paper, six species of *Phyllomyza* from China are described as new to science, and a key to the known species of *Phyllomyza* from China is presented.

Material and methods

The specimens were studied and illustrated with a Leica DM 2500. Genitalia preparations were made by removing and macerating the apical portion of the abdomen in cold saturated NaOH for 6 hours. After examination, they were transferred to fresh glycerine and stored in a microvial on the pin below the specimen or moved to an ethanol tube together with the wet specimens.

Types are deposited in Henan Agricultural University, Zhengzhou (HAU). Terms used for adult structures follow those of McAlpine (1981) and Brake (2000). The following abbreviations are used: asc — apical scutellar seta(e); bsc — basal scutellar seta(e); dc — dorsocentral seta(e); h — humeral seta(e); kepsts — katepisternal seta(e); npl — notopleural seta(e); pa — postalar seta(e); pos — postsutural seta(e); ppl — propleura seta(e); prs — presutural seta(e); prsc — prescutellar seta(e); sa — supraalar seta(e); S — sternite; T — tergite.

Taxonomy

Key to species (males) of *Phyllomyza* from China

1. Palpus almost bare, without setulae..... 2
- . Palpus with short setulae at tip and ventral side 12
2. Frons with 3 or 5 interfrontal setae 3
- . Frons with 4 interfrontal setae 6
3. Frons with 5 interfrontal setae..... *P. prolongatusa* Xi, Yang & Yin
- . Frons with 3 interfrontal setae 4
4. Postocellar setae converging; first flagellomere irregularly quadrate *P. nigrimarginata* **sp. nov.**
- . Postocellar setae cruciate; first flagellomere irregularly circular 5
5. Gena approximately one-ninth of eye height; cercus lacking ventral appendix..... *P. fuscusa* Xi, Yin & Yang
- . Gena approximately one-eleventh of eye height; cercus with short ventral appendix *P. gangliiformisa* **sp. nov.**
6. Cercus with short ventral appendix; arista 2.5 times longer than first flagellomere..... 7
- . Cercus lacking ventral appendix; arista 3 times longer than first flagellomere..... 8
7. Gena relatively broad, approximately one-sixth of eye height; palpus long..... *P. glossophyllusa* Xi, Yin & Yang
- . Gena relatively narrow, approximately one-eighth of eye height; palpus short *P. nudipalpis* Malloch
8. First flagellomere 1.5 times wider than long 9
- . First flagellomere less than 1.5 times wider than long 10
9. Gena relatively broad, approximately one-sixth of eye height; first flagellomere irregularly circular..... *P. aureolusa* Xi, Yin & Yang
- . Gena relatively narrow, approximately one-eleventh of eye height; first flagellomere irregularly quadrangular *P. ruiliensis* Xi, Yang & Yin
10. Arista 2.5 times longer than first flagellomere; ocellar triangle dark brown *P. luteigenis* Xi, Yang & Yin
- . Arista 3.0 times as long as first flagellomere; ocellar triangle blackish brown 11
11. Gena approximately one-fourteenth of eye height; knob of halter brownish *P. guangxiensis* Xi, Yang & Yin
- . Gena approximately one-tenth of eye height; knob of halter yellowish *P. leioipalpus* Xi, Yin & Yang

12. Palpus slightly longer, at least 0.6 mm long	13
- Palpus length less than 0.6 mm	15
13. Frons with 4 interfrontal setae; eye 1.5 times higher than long.....	<i>P. basilatusa</i> Xi, Yin & Yang
- Frons with 3 interfrontal setae; eye 1.4 times higher than long.....	14
14. First flagellomere irregularly quadrangular; lunule brownish	<i>P. longisetae</i> sp. nov.
- First flagellomere irregularly rectangular; lunule darkish gray.....	<i>P. sinensis</i> Xi & Yang
15. Cercus with ventral appendix	16
- Cercus lacking ventral appendix.....	20
16. Frons with 3 interfrontal setae	17
- Frons with 4 interfrontal setae	18
17. Eye 1.5 times higher than long; knob of halter darkish brown.....	<i>P. motuoensis</i> Xi, Yang & Yin
- Eye 1.3 times higher than long; knob of halter yellowish white.....	<i>P. striolatum</i> Xi, Yang & Yin
18. Vibrissal angle relatively acute; arista 3.5 times longer than first flagellomere	<i>P. obliquusa</i> Xi & Yin
- Vibrissal angle relatively blunt; arista 3 times longer than first flagellomere	19
19. Eye 1.5 times higher than long; postocellar setae cruciate	<i>P. epitacta</i> Hendel
- Eye 1.3 times higher than long; postocellar setae converging	<i>P. lii</i> sp. nov.
20. Arista at least 3 times longer than first flagellomere; eye 1.6 times higher than long	21
- Arista 3 times as long as first flagellomere; the height of eye less than 1.6 times longer than length	22
21. Gena approximately one-eleventh of eye height; arista darkish brown.....	<i>P. claviconis</i> Yang
- Gena approximately one-seventh of eye height; arista black	<i>P. covexusa</i> Xi & Yin
22. M_1 between r-m and dm-cu as long as dm-cu.....	23
- M_1 between r-m and dm-cu longer than dm-cu	24
23. Gena narrow, approximately one-eleventh of eye height; palpus long, 5 times longer than wide.....	<i>P. angustigenis</i> Xi & Yang
- Gena relatively broad, approximately one-seventh of eye height; palpus long, 7 times longer than wide	<i>P. euthyipalpis</i> Xi & Yang
24. M_1 between r-m and dm-cu at least 1.5 times longer than dm-cu	25
- M_1 between r-m and dm-cu less than 1.2 times longer than dm-cu	31
25. Vibrissa located at level of lower eye margin	26
- Vibrissa located below level of lower eye margin.....	29
26. Postocellar setae converging; gena approximately one-ninth of eye height.....	<i>P. clavellata</i> Xi & Yang
- Postocellar setae cruciate; gena approximately one-tenth of eye height.....	27
27. Frons with 3 or 4 interfrontal setae; tibiae yellowish	28
- Frons with 5 interfrontal setae; tibiae blackish brown	<i>P. melanogastera</i> sp. nov.
28. Frons with 4 interfrontal setae; ocellar triangle brownish	<i>P. flevies</i> Xi, Yang & Yin
- Frons with 3 interfrontal setae; ocellar triangle blackish	<i>P. luteipalpus</i> Malloch
29. Halter white; palpus sickle-shaped	<i>P. drepanipalpis</i> Xi & Yang
- Halter dark brown or yellowish; palpus slightly flat and straight	30
30. Gena approximately one-seventh of eye height; knob of halter yellowish.....	<i>P. emeishanensis</i> Xi & Yang
- Gena approximately one-fifth of eye height; knob of halter with upper half white and lower half dark brown.....	<i>P. latustigenis</i> Xi & Yang
31. First flagellomere irregularly quadrangular	32
- First flagellomere irregularly circular.....	34
32. Eye 1.4 times higher than long; ocellar triangle brown	33
- Eye 1.2 times higher than long; ocellar triangle black	<i>P. dicrana</i> Xi & Yang
33. Gena approximately one-ninth of eye height; arista 3 times longer than first flagellomere.....	

- *P. brevipalpis* **sp. nov.**
- . Gena approximately one-fourteenth of eye height; arista 2.5 times longer than first flagellomere *P. squadratpalpus* Xi, Yang & Yin
34. Vibrissal angle relatively acute, its tip less than 60 degree angle.....*P. cuspidigera* Xi & Yang
- . Vibrissal angle flat and blunt..... 35
35. Cercus with thin ventral appendix; hind tibia brownish *P. dilatata* Malloch
- . Cercus lacking short ventral appendix; hind tibia dark brown..... 36
36. Palpus wide, knife-shaped, 2.6 times longer than wide; knob of halter with upper half brownish and lower half dark brown..... *P. planipalpis* Xi & Yang
- . Palpus basally wide and apically narrowed; knob of halter with upper half yellow and under half yellowish ..
..... *P. tibetensis* Xi & Yang

1. *Phyllomyza brevipalpis* **sp. nov.** (Figs 1, 7, 13, 19)

Body length 1.6 mm; wing length 1.6 mm.

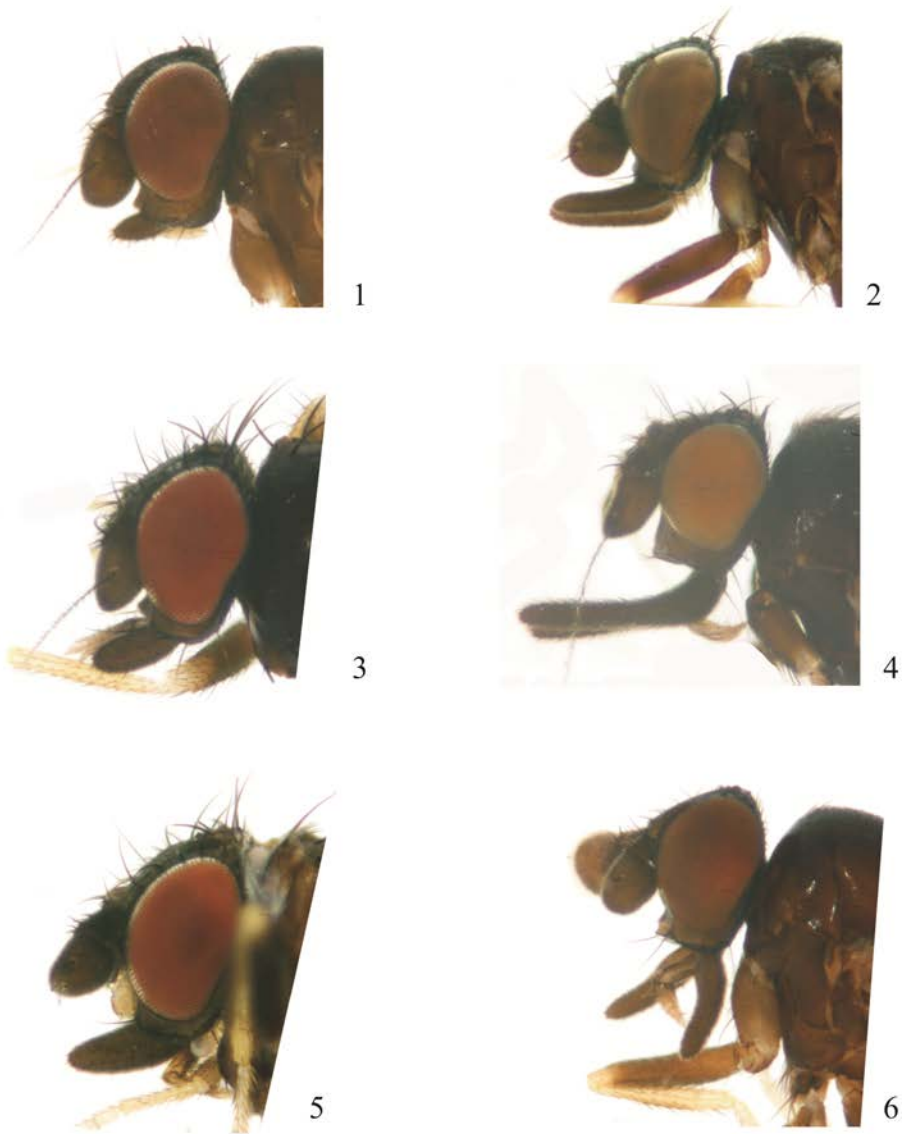
Male. Head brown with grayish microtomentum. Orbital plate subshiny brown, with microtomentum, ocellar triangle brown without microtomentum; lunule strap-shaped, brownish with black margin. Posterior eye margin ventrally diverging from head margin; eye 1.4 times as high as long, gena approximately one-ninth of eye height. Setae and setulae on head black; ocellar triangle with 2 ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on blackish brown orbital stripe, orbital setae laterocline and frontal setae mediocline, 5 interfrontal setae; postocellar setae cruciate. Lunule with 2 setae. Vibrissal angle relatively acute; vibrissa strong, located below level of lower eye margin. Antenna brown with microtomentum; pedicel with short black setulae at middle and margin, setulae at margin longer than others, longest one about 4 times longer than others; first flagellomere with pubescence, irregularly quadrate; arista 3 times longer than first flagellomere, black, distinctly pubescent. Proboscis slightly short and folded, darkish brown and yellow, with sparse black setulae. Palpus short, rod-like with blunt apex in lateral view, about 0.2 mm, 2 times longer than wide; darkish brown with short dense black pubescence, margin with sparse setulae.

Thorax brownish with grey microtomentum, except mesonotum shiny brownish with sparse black microtomentum; scutellum brownish with gray microtomentum. Setae and setulae on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 pos, 1sa, 2 pa, 1 kepsts (a row of setulae at forward position); scutellum 1.5 times wider than long, with pair of asc and bsc, asc 3 times longer than bsc. Legs slender, coxae and femora brownish, tibiae yellow except hind tibia darkish brown and yellow both at ends, tarsi yellowish. Setae and setulae on legs black, mid tibia with 1 black preapical dorsal seta. Wing hyaline, unspotted; veins brown; Sc strong; M₁ between r-m and dm-cu a little longer than dm-cu. Calypter yellowish, with dense brownish microtrichae, margin with black setulae. Knob of halter yellowish white.

Abdomen brown with gray microtomentum. Setae and setulae on abdomen black; T₂–T₅ with long setae at posterior margin; sternites with sparse setulae. Posteromedial triangular projection of T₁ into T₂ weak; S₂ generally horseshoe-shaped, the apex blunt and round, S₃ irregularly square, S₄ generally horizontal rectangular, S₅ horizontal trapezoid, apical margin flat and slightly arched. Male genitalia: epandrium with 7 strong black setae; upper blade of bifurcated tip of surstylus swollen and apical margin blunt, lower blade shorter than upper one, extremely swollen; cercus arched with short sparse setae.

Female. Similar to male. Female terminalia: T₈ brownish, margin with setulae,

supra-anal plate irregularly triangular; subanal plate nearly rectangular, apical margin arched to basal margin; cercus with sparse setulae.



Figures 1–6. Heads, lateral views (male). 1. *P. brevipalpis* **sp. nov.**; 2. *P. gangliiformisa* **sp. nov.**; 3. *P. lii* **sp. nov.**; 4. *P. longisetae* **sp. nov.**; 5. *P. melanogastera* **sp. nov.**; 6. *P. nigrimarginata* **sp. nov.** Scale bar = 0.5 mm.

Holotype. ♂, **China**, Yunnan, Baoshan, Baihualing, 12-V-2012, Wenliang LI. **Paratypes.** 2♀, **China**, Yunnan, Dehong, Tongbiguan, 01-V-2012, Wenliang LI; 1♀, **China**, Yunnan, Tengchong, Zizhi, 07-V-2012, Wenliang LI; 2♂, **China**, Yunnan, Tengchong, Datang, 07-V-2012, Wenliang LI; 1♂, **China**, Yunnan, Baoshan, Nankang, 10-V-2012, Yuanye LIU; 1♂, **China**, Yunnan, Baoshan, Dashaoping, 11-V-2012, Yuanye LIU.

Etymology. The specific epithet refers to the short palpus.

Remarks. This species is similar to *Phyllomyza equitans* (Hendel), but can be separated from the latter by the first flagellomere irregularly quadrate; gena approximately one-ninth of eye height; M_1 between r-m and dm-cu 1.1 times longer than dm-cu. In *P. equitans*, the first flagellomere is irregularly circular; gena approximately one-fourth of eye height; M_1 between r-m and dm-cu 1.5 times longer than dm-cu (Hendel 1919).

2. *Phyllomyza gangliiformisa* sp. nov. (Figs 2, 8, 14, 20)

Body length 1.4 mm; wing length 1.4 mm.

Male. Head brown with grayish microtomentum. Orbital plate subshiny brown, with microtomentum; ocellar triangle darkish brown without microtomentum; lunule strap-shaped, darkish brown. Posterior eye margin ventrally diverging from head margin; eye 1.4 times as high as long, gena approximately one-eleventh of eye height. Setae and setulae on head black; ocellar triangle with 2 ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on blackish brown orbital stripe, orbital setae laterocline and frontal setae mediocline; 3 interfrontal setae; postocellar setae cruciate. Lunule with 2 short setae. Vibrissal angle relatively blunt, the tip almost at 90 degree angle; vibrissa strong, located at the level of lower eye margin. Antenna brownish with microtomentum; pedicel with short black setulae at middle and margin, setulae at margin longer than others, longest one about 4 times longer than others; first flagellomere with pubescence, irregularly circular, almost being the same length and width; arista 3 times as long as first flagellomere. Proboscis short, brownish, with sparse setulae. Palpus slightly longer, gradually narrowing to the apex but not very obviously, about 0.4 mm; brownish with short dense black pubescence, margin without short sparse setulae.

Thorax brown with grey microtomentum, except mesonotum shiny brown with sparse black microtomentum; scutellum darkish brown with gray microtomentum. Setae and setulae on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 pos, 1 sa, 2 pa, 1 kepsts (setulae at forward position); scutellum 1.5 times wider than long, with pair of asc and bsc, asc 3 times longer than bsc. Legs slender, coxae and femora brown, tibiae blackish yellow except hind tibia yellowish brown and yellow both ends, tarsi yellowish. Setae and setulae on legs black. Mid tibia with 1 black preapical dorsal seta. Wing hyaline, unspotted; veins brown; Sc strong; M_1 between r-m and dm-cu a little longer than dm-cu. Calypter yellowish, with dense brownish microtrichae, margin with brownish setulae. Knob of halter yellowish white.

Abdomen brown with gray microtomentum. Setae and setulae on abdomen black; T2–T5 with setae at posterior 3/4, marginal setae longer than others; sternites with sparse setulae. Posteromedial triangular projection of T1 into T2 strong; S2 generally horseshoe-shaped, S3 vertically rectangular, S4 irregularly subquadrate, S5 generally trapezoid-shaped. Male genitalia: epandrium with 8 strong black setae; surstylus with upper blade of bifurcated tip slightly swollen, lower one short and slightly thin; cercus arched with ventral appendix, with short sparse setae.

Female. Unknown.

Holotype. ♂, **China**, Yunnan, Tengchong, Jietou, 09-V-2012, Wenliang LI. **Paratypes.** 1♂, **China**, Yunnan, Dehong, Xima, 04-V-2012, Wenliang LI; 2♂, **China**, Yunnan, Tengchong, Datang, 08-V-2012, Wenliang LI; 1♂, **China**, Yunnan, Tengchong, Jietou, 09-V-2012, Yuanye LIU; 1♂, **China**, Yunnan, Tengchong, Jietou, 10-V-2012, Yuanye LIU; 1♂, **China**, Yunnan,

Tengchong, Xiaodifang, 10-V-2012, Wenliang LI.

Etymology. The specific epithet refers to the cercus with ventral appendix, just like tuberculate processes.

Remarks. This species is similar to *P. donisthorpei* Schmitz, but can be separated by the eye being 1.4 times higher than long, gena approximately one-eighth of eye height; tibiae blackish yellow except hind tibia yellowish brown and yellow at both ends. In *Phyllomyza donisthorpei*, eye is 1.2 times higher than long, gena approximately one-fifth of eye height; tibiae yellow except hind tibia darkish brown and yellow at both ends (Schmitz 1923).

3. *Phyllomyza lii* sp. nov. (Figs 3, 9, 15, 21)

Body length 1.6 mm; wing length 1.6 mm.

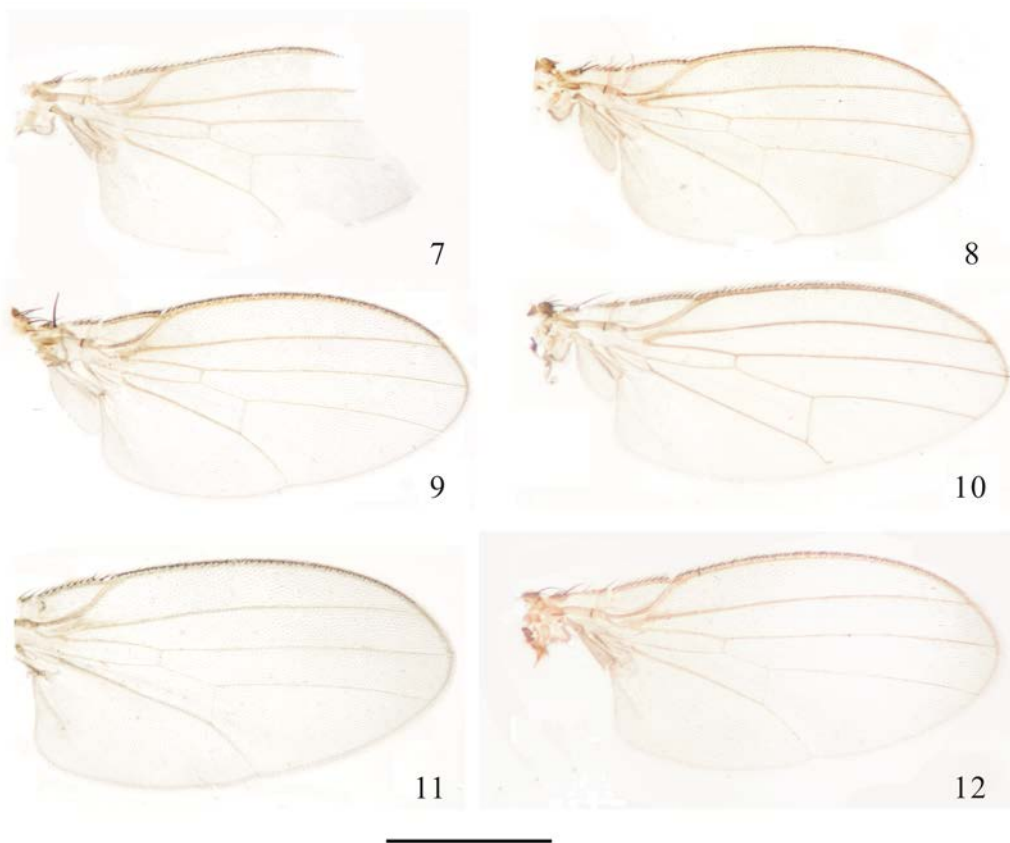
Male. Head black with grayish microtomentum. Orbital plate subshiny black, with microtomentum, ocellar triangle blackish brown without microtomentum; lunule strap-shaped, brownish. Posterior eye margin ventrally diverging from head margin; eye 1.3 times higher than long, gena approximately one-tenth of eye height. Setae and setulae on head black; ocellar triangle with 2 ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on blackish brown orbital stripe, orbital setae laterocline and frontal setae mediocline, 4 interfrontal setae; postocellar setae converging. Lunule with 2 short setae. Vibrissal angle relatively blunt; vibrissa strong, located at level of lower eye margin. Antenna brownish with microtomentum; pedicel with black setulae at middle and margin, longest one about 3.5 times longer than others; first flagellomere with pubescence, irregularly circular; arista 3 times as long as first flagellomere, black, distinctly pubescent. Proboscis grayish yellow, with short sparse black setulae. Palpus short, about 0.2 mm; brownish with short dense black pubescence, margin with short sparse setulae.

Thorax darkish brown with grey microtomentum, except mesonotum shiny brown with sparse black microtomentum; scutellum darkish brown with gray microtomentum. Setae and setulae on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 sa, 2 pa, 1 kepsts (a row of setulae at forward position); scutellum 1.7 times wider than long, with pair of asc and bsc, asc 2.5 times longer than bsc. Legs slender, coxae and femora brown, tibiae blackish yellow except hind tibia brown and yellow at both ends, tarsi yellowish. Setae and setulae on legs black. Mid tibia with 1 black preapical dorsal seta. Wing hyaline, unspotted; veins brown; Sc strong; M_1 between r-m and dm-cu longer than dm-cu. Calypter yellowish, with brownish microtrichae, margin with brownish setulae. Knob of halter yellowish white.

Abdomen brown with gray microtomentum. Setae and setulae on abdomen black; T2–T5 with setae at posterior 3/4, marginal setae longer than others; sternite with sparse setulae. Posteromedial triangular projection of T1 into T2 strong; S2 generally horseshoe-shaped, S3 and S4 irregularly rectangular, S5 generally trapezoid-shaped. Male genitalia: epandrium with 6 strong black setae; surstylus with upper blade of bifurcated tip swollen, lower one slightly swollen and shorter than upper one; cercus arched with a little longer ventral appendix, with short sparse setae.

Female. Unknown.

Holotype. ♂, **China**, Yunnan, Baoshan, Baihualing, 16-VII-2012, Xuankun LI.
Paratypes. 5♂, same data as holotype; 3♂, **China**, Yunnan, Baoshan, Dahaoping, 11-V-2012, Wenliang LI.



Figures 7–12. Wings (male). 7. *P. brevipalpis* **sp. nov.**; 8. *P. gangliiformisa* **sp. nov.**; 9. *P. lii* **sp. nov.**; 10. *P. longisetae* **sp. nov.**; 11. *P. melanogastera* **sp. nov.**; 12. *P. nigrimarginata* **sp. nov.** Scale bar = 0.5 mm.

Etymology. The specific epithet refers to the collector Dr. Xuankun LI.

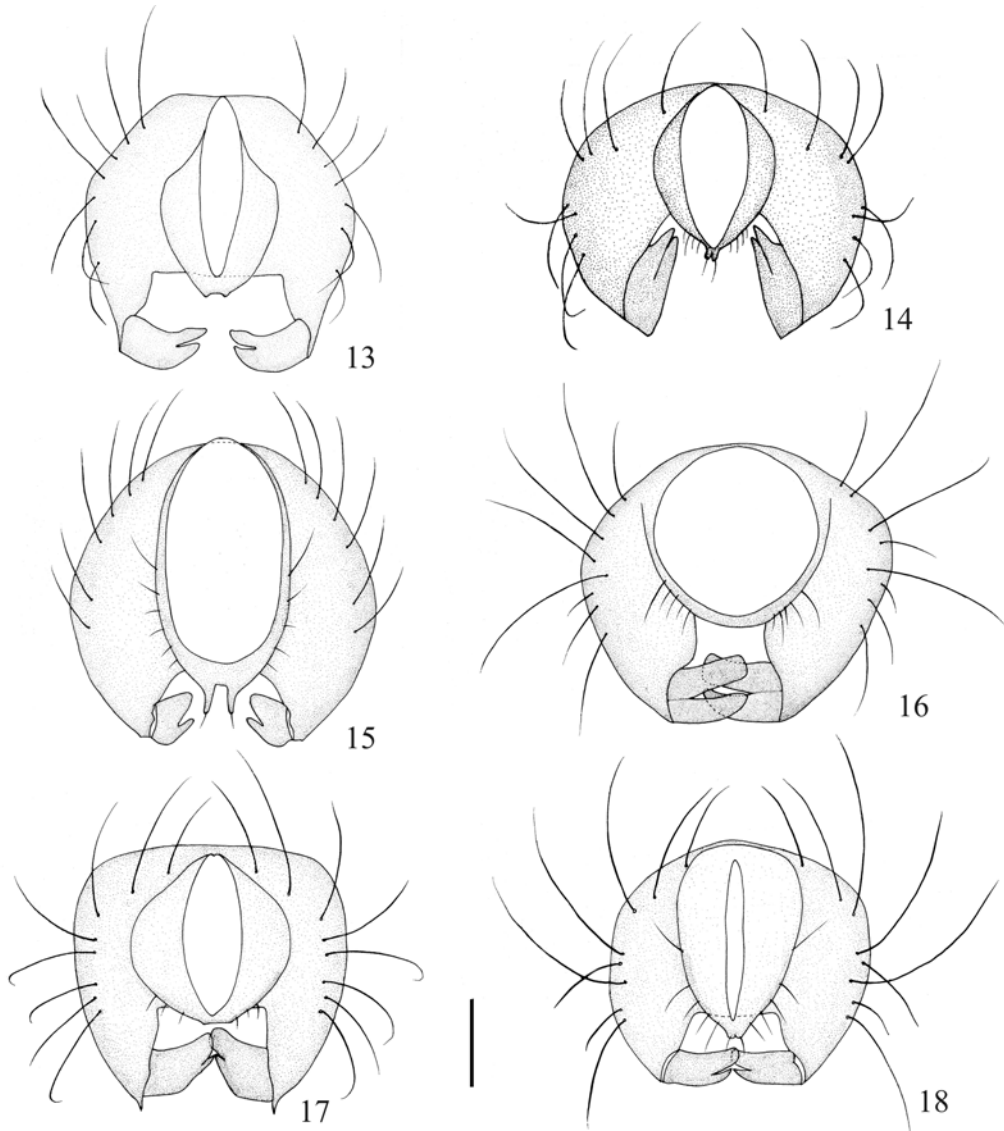
Remarks. This new species is distinctly different from other species with the scutellum 1.7 times wider than long; cercus arched with a little longer ventral appendix. Gena narrowed, approximately one-tenth of eye height. Surstylus with upper blade of bifurcated tip swollen and lower one smaller than upper one.

4. *Phyllomyza longisetae* **sp. nov.** (Figs 4, 10, 16, 22)

Body length 1.9 mm; wing length 2.0 mm.

Male. Head darkish brown with grayish micromentum. Orbital plate subshiny brown, with microtomentum; ocellar triangle blackish brown without microtomentum; lunule strap-shaped, brownish. Posterior eye margin ventrally diverging from head margin; eye 1.4 times higher than long, gena approximately one-eighth eye height. Setae and setulae on head black; ocellar triangle with 2 ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on darkish brown orbital stripe, orbital setae laterocline and frontal setae mediocline, 3 interfrontal setae; postocellar setae cruciate. Lunule with 2 short setae. Vibrissal angle relatively blunt; vibrissa strong, located at level of lower eye margin. Antenna yellowish brown with microtomentum; pedicel with black setulae at middle and margin, setulae at

margin longer than others, longest one about 4.5 times longer than others; first flagellomere with pubescence, irregularly quadrangular, apical margin blunted and inclined; arista 3.5 times longer than first flagellomere, darkish brown, distinctly pubescent. Proboscis short and geniculate, brownish, with sparse brownish setulae, labella poplar leaf-shaped and bouffant. Palpus slightly longer, thick at basal 1/3, the remaining part straight and slightly thin, about 0.7 mm; brownish with long dense black pubescence, margin without sparse setae.



Figures 13–18. Epandrium, cerci, and surstyli, posterior views (male). 13. *P. brevipalpis* **sp. nov.**; 14. *P. gangliiformisa* **sp. nov.**; 15. *P. lii* **sp. nov.**; 16. *P. longisetae* **sp. nov.**; 17. *P. melanogastera* **sp. nov.**; 18. *P. nigrimarginata* **sp. nov.** Scale bar = 0.1 mm.

Thorax brown with gray microtomentum, except mesonotum shiny brown with sparse black microtomentum; scutellum darkish brown with gray microtomentum. Setae and setulae

on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 pos, 1 sa, 2 pa, 1 kepsts (setulae at forward position); scutellum 1.3 times wider than long, with pair of asc and bsc, asc 3 times longer than bsc. Legs slender, coxae and femora darkish brown, tibiae darkish brown except fore tibia darkish yellow, tarsi yellowish. Setae and setulae on legs black. Wing hyaline, unspotted; veins brown; Sc strong; M_1 between r-m and dm-cu longer than dm-cu, distal portion of Cu_1 (the part beyond dm-cu) shorter than dm-cu. Calypter yellowish, with dense brownish microtrichae, margin with brownish setulae. Knob of halter darkish brown.

Abdomen brown with gray microtomentum. Setae and setulae on abdomen black; T2–T5 with setae at posterior 3/4, marginal setae longer than others; sternite with sparse setulae. Posteromedial triangular projection of T1 into T2 strong; S2 generally horseshoe-shaped, S3 vertically rectangular and margin blunt, S4 an irregular trapezoid, S5 slightly strap-shaped. Male genitalia: epandrium with 8 strong black setae; surstylus with upper blade of bifurcated tip swollen, with apical margin flat and blunt, lower one swollen and shorter than upper one; cercus irregularly rectangular, with short sparse setae.

Female. Unknown.

Holotype. ♂, **China**, Yunnan, Baoshan, Baihualing, 12-V-2012, Wenliang LI. **Paratype.** 1♂, **China**, Yunnan, Baoshan, Baihualing, 16-VII-2013, Wei ZHANG.

Etymology. The specific epithet refers to palpus having long dense black pubescence.

Remarks. This new species is somewhat similar to *P. sinensis* Xi & Yang, but differs in palpus being slightly longer, straight at basal 1/3; S5 slightly strap-shaped. In *Phyllomyza sinensis*, the palpus is longer, curved at basal 1/3; S5 slightly trapezoidal. (Xi & Yang 2015).

5. *Phyllomyza melanogastera* sp. nov. (Figs 5, 11, 17, 23)

Body length 1.6 mm; wing length 1.6 mm.

Male. Head brown with grayish microtomentum. Orbital plate subshiny brown, with microtomentum, ocellar triangle brown without microtomentum; lunule strap-shaped, darkish gray. Posterior eye margin ventrally diverging from head margin; eye 1.3 times higher than long, gena approximately one-tenth of eye height. Setae and setulae on head black; ocellar triangle with 2 ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on darkish brown orbital stripe, orbital setae laterocline and frontal setae mediocline, 5 interfrontal setae; postocellar setae cruciate. Lunule with 2 short setae. Vibrissal angle relatively blunt; vibrissa strong, located at level of lower eye margin. Antenna darkish brown with microtomentum; pedicel with black setulae at middle and margin, setulae at margin longer than others, longest one about 4 times longer than others; first flagellomere with pubescence, irregularly subsquare, almost the same length and width; arista 3.5 times as long as first flagellomere, blackish brown, distinctly pubescent. Proboscis short and folded, darkish yellow, with sparse black setulae. Palpus flattened in lateral view, about 0.3 mm, 2.6 times longer than wide; brownish with short dense black pubescence, margin with sparse setulae.

Thorax brown with grey microtomentum, except mesonotum shiny brown with sparse black microtomentum; scutellum brown with gray microtomentum. Setae and setulae on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 pos, 1 sa, 1 pa, 1 kepsts (setulae at forward position); scutellum 1.5 times wider than long, with pair of asc and bsc, asc 3 times longer than bsc. Legs slender, coxae brown, femora brown and with yellow areas, tibiae blackish brown and yellow except mid tibia darkish yellow, tarsi yellowish. Setae and setulae on legs

black. Mid tibia with 1 black preapical dorsal seta. Wing hyaline, unspotted; veins brown; Sc strong; M_1 between r-m and dm-cu longer than dm-cu. Calypter yellowish, with dense brown microtrichae, margin with brownish setulae. Knob of halter yellowish white.

Abdomen brown with gray microtomentum except sternites blackish brown. Setae and setulae on abdomen black; T2–T5 with setae at posterior 3/4, marginal setae longer than others; sternites black and with sparse setulae. Posteromedial triangular projection of T1 into T2 weak; S2 generally horseshoe-shaped, wider and apical margin blunt, S3 and S4 irregularly vertical rectangular, S4 wider than S3, S5 generally trapezoidal, apical margin smooth. Male genitalia: epandrium with 8 strong black setae, surstylus with upper blade of bifurcated tip extremely swollen, with apical margin blunt, lower one thin and shorter than upper one, apical margin acute; cercus irregularly rectangular, with short sparse setae.

Female. Unknown.

Holotype. ♂, **China**, Yunnan, Baoshan, Baihualing, 16-VII-2012, Xunkun LI. **Paratypes.** 1♂, **China**, Yunnan, Ruili, Moli, 29-IV-2012, Wenliang LI; 1♂, **China**, Yunnan, Honghe, Lvchun, 09-V-2012, Ding YANG; 1♂, **China**, Yunnan, Honghe, Lvchun, 11-VI-2013, Jinying YANG.

Etymology. The specific epithet refers to the color of sternites.

Remarks. This new species is distinctly different from other species of this genus in the femora brown and with yellow areas; sternites black; epandrium irregularly square.

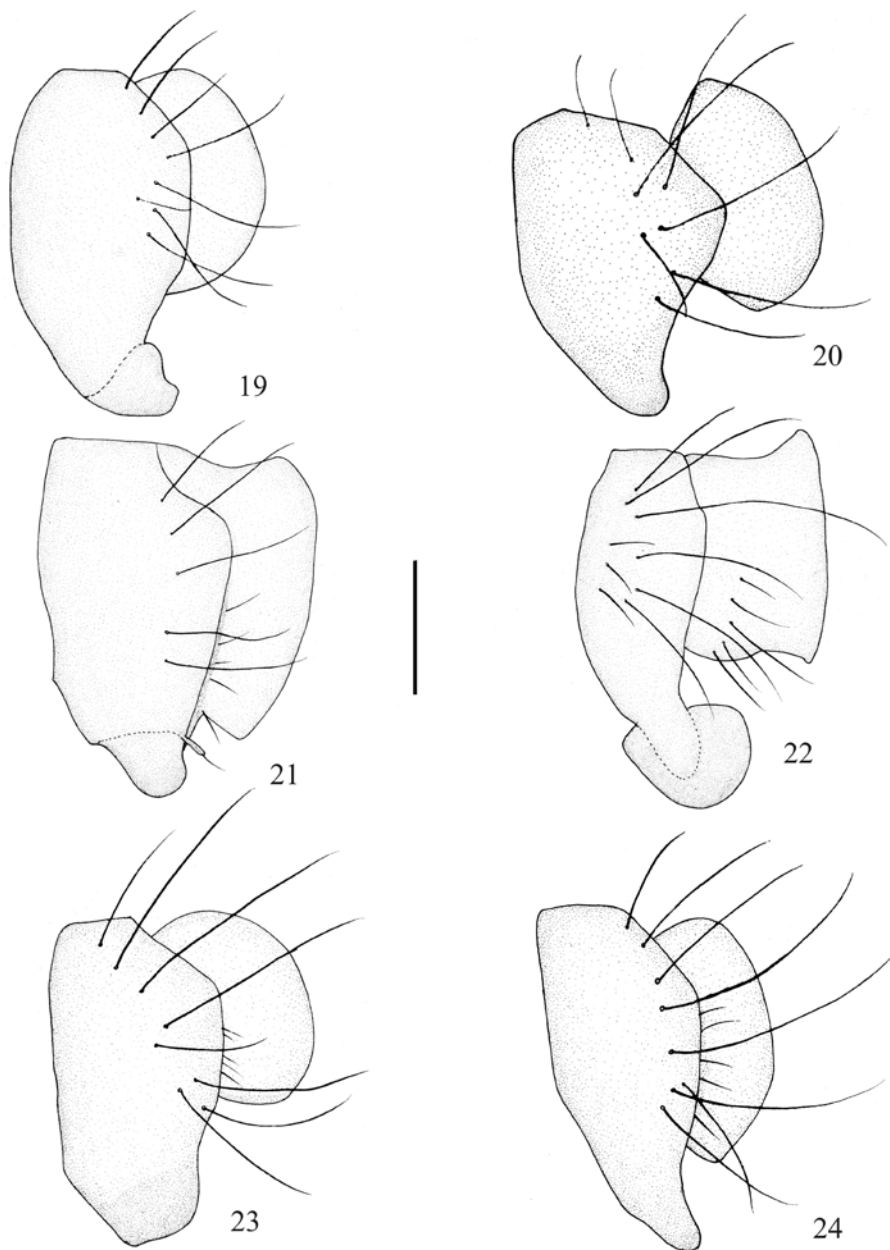
6. *Phyllomyza nigrimarginata* sp. nov. (Figs 6, 12, 18, 24)

Body length 1.3 mm; wing length 1.4 mm.

Male. Head darkish brown with grayish microtomentum. Orbital plate subshiny brown, with microtomentum, ocellar triangle brown without microtomentum; lunule strap-shaped, brown with black margin. Posterior eye margin ventrally diverging from head margin; eye 1.4 times higher than long, gena approximately one-tenth eye height. Setae and setulae on head black; ocellar triangle with 2 ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on brownish orbital stripe, orbital setae laterocline and frontal setae mediocline, 3 interfrontal setae; postocellar setae converging. Lunule with 2 short setae. Vibrissal angle relatively blunt; vibrissa strong, located at level of lower eye margin. Antenna brown with microtomentum; pedicel with short black setulae at middle and margin, setulae at margin longer than others, longest one about 3.5 times longer than others; first flagellomere with pubescence, irregularly quadrate; arista 3 times as long as first flagellomere, black, distinctly pubescent. Proboscis slightly short and folded, darkish brown, with sparse black setulae. Palpus long, basal relatively wider than apex and with blunt tip in lateral view, about 0.3 mm, 3.5 times longer than wide; darkish brown with short dense black pubescence, margin without sparse setulae.

Thorax brownish with grey microtomentum, except mesonotum shiny brownish with sparse black microtomentum; scutellum brownish with gray microtomentum. Setae and setulae on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 pos, 1 sa, 2 pa, 1 kepsts (a row setulae at forward position); scutellum 1.6 times wider than long, with pair of asc and bsc, asc 3 times longer than bsc. Legs slender, coxae and femora brownish, tibiae darkish yellow except hind tibia darkish brown and with yellow apically, tarsi yellowish. Setae and setulae on legs black. Mid tibia with 1 black preapical dorsal seta. Wing hyaline, unspotted; veins brown; Sc strong;

M₁ between r-m and dm-cu a little longer than dm-cu. Calypter yellowish, with dense brownish microtrichiae, margin with brownish setulae. Knob of halter yellowish white.



Figures 19–24. Epandrium, cerci, and surstyli, lateral views (male). 19. *P. brevipalpis* **sp. nov.**; 20. *P. gangliiformisa* **sp. nov.**; 21. *P. lii* **sp. nov.**; 22. *P. longisetae* **sp. nov.**; 23. *P. melanogastera* **sp. nov.**; 24. *P. nigrimarginata* **sp. nov.** Scale bar = 0.1 mm.

Abdomen brown with gray microtomentum. Setae and setulae on abdomen black; T2–T5 with setae, marginal setae longer than others; sternites with sparse black setulae at posterior

3/4. Posteromedial triangular projection of T1 into T2 weak; S2 generally horseshoe-shaped, apical margin blunt and round, S3 vertical rectangular, S4 irregularly trapezoid-shaped, the apical margin slightly wider than basal margin, S5 generally horizontal trapezoid-shaped, apical margin flat and smooth. Male genitalia: epandrium with 8 strong black setae, surstylus with upper blade of bifurcated tip swollen, with apical margin blunt, lower one thinner and shorter than upper one, apical margin acute; cercus irregularly arched, with short sparse setae.

Female. Unknown.

Holotype. ♂, **China**, Yunnan, Yingjiang, Xima, 04-V-2012, Wenliang LI. **Paratypes.** 2♂, **China**, Yunnan, Baoshan, Baihualing, 12-V-2012, Wenliang LI.

Etymology. The specific epithet refers to the lunule with black margin.

Remarks. This new species is somewhat similar to *Phyllomyza leioipalpa* Xi, Yin & Yang, but differs in the postocellar setae converging; 3 interfrontal setae; the mesonotum has 2 dc. In *Phyllomyza amamiensis*, the postocellar setae cruciate; 4 interfrontal setae; the mesonotum has 4 dc (Xi, Yin & Yang 2016).

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